

### **REMARKS/ARGUMENTS**

The present amendment is in response to the final Office Action mailed June 16, 2003, in which Claims 1 through 10, 12 through 18, 20 and 21 were rejected. Applicants have thoroughly reviewed the outstanding Office Action including the Examiner's remarks and the reference cited therein. The following remarks are believed to be fully responsive to the Office Action and, when coupled with the amendments made herein, are believed to render all claims at issue patentably distinguishable over the cited references.

Claims 1 and 20 are amended herein. No claims are cancelled. No claims are added. Accordingly, Claims 1 through 10, 12 through 18, 20 and 21 remain pending.

All the changes are made for clarification and are based on the application and drawings as originally filed. It is respectfully submitted that no new matter is added.

Applicants respectfully request reconsideration in light of the above amendments and the following remarks.

### **DOUBLE PATENTING REJECTION**

With respect to Paragraphs 1, 2 and 3 of the Office Action, Applicants acknowledge with appreciation the Examiner's notation that the signing attorney was not an attorney of record. This discrepancy is in the process of being resolved and Applicants will re-submit a properly empowered Terminal Disclaimer shortly.

The undersigned apologizes for the confusion and inconvenience created thereby.

### **CLAIM REJECTIONS – 35 U.S.C. SECTION 102(e)**

With respect to Paragraphs 5, 6 and 7 of the Office Action, the Examiner rejected Claims 1 through 5, 7, 8, 9, 10, 12, 13, 16, 17, 18, 20 and 21 under 35 U.S.C. Section 102(e) as being anticipated by U.S. Patent No. 6,159,612 to Chu *et al.* (hereinafter referred to as "Chu *et al.*").

Applicants respectfully traverse these rejections.

Initially Applicants observe that to qualify as a Section 102 reference, the single reference must demonstrate *all* of the limitations and features of a claim before a rejection can be applied. By the Examiner's own admission under the rejection under 35 U.S.C. Section 103(a) (discussed below), Chu *et al.* "is silent regarding the isotacticity of the isotactic polypropylene and neither teaches the addition of hydrocarbon resins as claimed." These features taken alone distinguish the composition of the film as claimed over the films disclosed in Chu *et al.*.

Furthermore, independent Claims 1 and 20 have been amended for clarification to specify that the interlayer is formed from an isotactic propylene homopolymer. Conversely, the intermediate layer of Chu *et al.* is formed from a syndiotactic polypropylene. Isotactic polypropylene is a different class of polymer than syndiotactic polypropylene. Specifically, syndiotactic polymers as used by Chu *et al.* have the methyl groups alternating regularly on opposite sides of the chain, whereas the structure of the isotactic polypropylene is characterized in that the methyl groups are all located on the same side of the polymer chain. Applicants have attached as **Item I** a

copy of page 867 from the *Concise Encyclopedia Chemistry* for clarification. Clearly such significant differences in structures cause different properties and one could not be substituted for the other without opening the door to different if not entirely unpredictable results.

Accordingly, it can be seen that there are at least two significant structural differences between *Chu et al.* and invention as claimed. First, and as defined in the independent claims, there is a base layer modified by hydrocarbon resin. Second, and also as defined in the independent claims, the present invention incorporates an interlayer that is composed of an isotactic polypropylene, whereas the cited reference to *Chu et al.* incorporates such a layer that is composed of a syndiotactic polymer.

Accordingly, Applicants respectfully submit that independent Claims 1 and 20 are not anticipated by the teaching of *Chu et al.* The remaining rejected claims, being dependent upon Claim 1, are likewise believed not to be anticipated by *Chu et al.*

Reconsideration and withdrawal of the Examiner's rejections under 35 U.S.C. Section 102(e) are respectfully requested.

#### **CLAIM REJECTIONS – 35 U.S.C. SECTION 103(a)**

With respect to Paragraphs 8 and 9 of the Office Action, the Examiner rejected Claims 1 through 5, 7 through 10, 12 through 18, 20, and 21 under 35 U.S.C. Section 103(a) as being unpatentable over *Chu et al.* in view of U.S. Patent No. 5,254,394 to *Bothe et al.* (hereinafter referred to as "*Bothe et al.*").

In general, the Examiner argues that reference to Bothe *et al.* provides the element missing from the teachings of the reference to Chu *et al.* in the form of providing the addition of hydrocarbon resin. The Examiner concludes, based upon this teaching, that it would have been obvious to add the hydrocarbon resin provided by Bothe *et al.* to the teachings of Chu *et al.*

Applicants respectfully traverse these rejections on the following grounds.

### **No Teaching To Combine References**

First, Applicants respectfully submit that the proposed combination of Chu *et al.* and Bothe *et al.* is an improper combination and is not supportable.

An important object of the present invention is to improve the barrier properties of biaxially oriented polypropylene film which has been a common packing material for about 40 years. There is an established market of hundreds of thousands of tons of biaxially oriented polypropylene packaging material today. The Examiner is relying on hindsight in his attempts to improve the properties of known biaxially oriented polypropylene film by relying upon prior art related to a relatively exotic and remote type of film – specifically, syndiotactic polypropylene film – to provide a teaching as to how to modify known biaxially oriented polypropylene film in order to improve its properties.

More directly, both Chu *et al.* and Bothe *et al.* are concerned with syndiotactic polypropylene film. At the time of filing of the present application syndiotactic polymers were still very exotic resins. In fact, syndiotactic polypropylene was not even being used on an industrial scale until metallocen catalysts were found which gave a high

enough stereo selectivity. Furthermore, syndiotactic polypropylene is known to behave very differently with respect to crystallization. Scientific studies have been performed to understand the different crystallization behavior (please refer to the attached **Item II**). While it was known in theory that syndiotactic polypropylene could be used to make biaxially oriented films, no such film was on the market at the time of the filing of the current application.

Furthermore, and as set forth above, the distinguishing feature of the instant invention versus Chu *et al.* is the hydrocarbon resin in the base layer plus the isotactic polypropylene instead of syndiotactic polypropylene in the interlayer. Very clearly Bothe *et al.* provide no motivation to modify the polymer of the intermediate layer of Chu *et al.* Therefore even if Bothe *et al.* teach the use of hydrocarbon resin, they certainly lack any teaching in relation to an intermediate layer since there is *no* teaching about any intermediate layer at all in Bothe *et al.*

Accordingly, Applicants respectfully submit that there is absolutely no motivation to replace the syndiotactic polypropylene of the intermediate layer by isotactic polypropylene. In fact, if a skilled artisan had no knowledge of the instant invention he would never consider the teachings of Chu *et al.* and Bothe *et al.*, which both relate very singularly to syndiotactic polypropylene films, in order to find a way to further improve the barrier properties of known biaxially oriented polypropylene film.

### **The Resulting Combination Would Not Render The Present Invention Obvious**

Second, even making the proposed combination of Chu *et al.* and Bothe *et al.* was proper, the resulting combination would still fail to render the present invention unpatentable.

In general, applying the teaching of Bothe *et al.* to the film of Chu *et al.* would result, at best, in a film having a syndiotactic top layer onto the wax modified syndiotactic intermediate layer of Chu *et al.*, eventually having a hydrocarbon resin either in the base or the top layer in addition. The teachings of Bothe *et al.* in relation to the location of the hydrocarbon resin is somewhat unspecific in that all layers can include the hard resin. It simply cannot be derived from Bothe *et al.* why they suggest the use of hydrocarbon resin. This reference is silent as to the ability of the hard resin to improve barrier properties such as gloss, stiffness or sealability. Bothe *et al.* do not say which property shall be improved by the addition of hydrocarbon resin in his film. It seems the intention of the reference to Bothe *et al.* is not to further improve the barrier by hard resin, since its inventors suggest that barrier properties can be improved by an additional barrier layer (col. 3, lines 21 to 31). In view of such a teaching a skilled artisan who desires to improve the barrier of his film would stay with the explicit and clear teaching of Bothe *et al.* and would add a barrier layer as taught in that reference.

Applicants stress that the object of the present invention is and remains the improvement of the barrier of biaxially oriented polypropylene film. The skilled artisan, in attempting to make such an improvement, would refer to the known prior art

embodied by the reference to Bothe *et al.* and would resolve that the barrier can indeed be improved by an additional barrier layer. The same artisan would also read that the film can contain hard resin without any explanation as to *why* the hard resin should be added. The artisan would ask himself what would be *obvious* to do if the object was to make a better barrier, and, based on the teachings of Bothe *et al.*, would conclude that the obvious thing to do is to add a barrier layer of PVOH, polyamid or metal, exactly as taught by that reference.

Conversely, it is *not* obvious to comprehend the teachings of hard resin and to modify the film of Chu *et al.* with a reasonable expectation of further improving the barrier of the film of that reference. A reasonable skilled artisan realizes that both teachings say that **one good barrier layer** is needed if the object is to create a film with good barrier properties. Bothe *et al.* say this explicitly in col. 4 lines 21 to 31 and specifically sets forth that appropriate layers to achieve this end include metal layers, PVOH or polyamid layers. Chu *et al.* suggest another barrier layer and sets forth that good barrier results are achieved by the addition of syndiotactic polypropylene plus wax.

The claimed invention of improving the barrier of the film is different from the concepts of Chu *et al.* and Bothe *et al.*, whether taken alone or in combination. Bothe *et al.* and Chu *et al.* very clearly provide that **only one good barrier layer is needed to achieve this result** which is to have an overall good barrier of the film. Relying on these references, again, alone or in combination, would lead the skilled artisan away from the use of more than one good barrier layer. **Very differently, the present invention claims more than a single barrier layer** and provides a film composition

which makes the barrier better using two separate layers with different additives interacting to provide better barrier to the film.

Bothe *et al.* and Chu *et al.* render obvious only the making of a film with an overall good barrier by including one single very good barrier layer. By no means do Bothe *et al.* and Chu *et al.* suggest that an excellent barrier of a biaxially oriented polypropylene film can be achieved by having different additives in different layers of isotactic propylene homopolymer. Therefore, Applicants respectfully submit in conclusion that neither Chu *et al.* nor Bothe *et al.*, when considered either alone or in combination, render obvious the invention as instantly claimed.

Reconsideration and withdrawal of the rejections under 35 U.S.C. Section 103(a) are respectfully requested.

#### **ENTRY OF AMENDMENT AFTER FINAL**

It is respectfully submitted that the present amendment should be entered in accordance with the provisions of 37 C.F.R. Section 1.116 on the grounds that: (1) The claims as now presented are in better form for appeal purposes, if necessary; (2) no new issues have been raised; (3) and, moreover, the present amendment is believed to place the application in condition for allowance.

#### **CONCLUSION**

In light of the above amendments and remarks, Applicants respectfully submit that all pending claims as currently presented are in condition for allowance. If, for any



reason, the Examiner disagrees, please call the undersigned attorney at 248-433-7552 in an effort to resolve any matter still outstanding *before* issuing another action. The undersigned attorney is confident that any issue which might remain can readily be worked out by telephone.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'T. Moga', with a long, sweeping horizontal line extending to the right.

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